

Title: Teaching the Next Generation of Scientists and Engineers the NASA Design Process

Abstract:

The Integrated Product Team (IPT) program, led by The University of Alabama in Huntsville (UAH), is a multidisciplinary, multi-university, multi-level program whose goal is to provide opportunities for high school and undergraduate scientists and engineers to translate stakeholder needs and requirements into viable engineering design solutions via a distributed multidisciplinary team environment. The current program supports three projects. The core of the program is the two-semester senior design experience where science, engineering, and liberal arts undergraduate students from UAH, the College of Charleston, Southern University at Baton Rouge, and Ecole Supérieure des Techniques Aéronautiques et de Construction Automobile (ESTACA) in Paris, France form multidisciplinary competitive teams to develop system concepts of interest to the local aerospace community. External review boards form to provide guidance and feedback throughout the semester and to ultimately choose a winner from the competing teams. The other two projects, the Innovative Student Project for the Increased Recruitment of Engineering and Science Students (InSPIRESS) Level I and Level II focus exclusively on high school students. InSPIRESS Level I allows high schools to develop a payload to be accommodated on the system being developed by senior design experience teams. InSPIRESS Level II provides local high school students first-hand experience in the senior design experience by allowing them to develop a subsystem or component of the UAH-led system over the two semesters. This program provides a model for NASA centers to engage the local community to become more involved in design projects.

Synopsis:

The Integrated Product Team (IPT) program is an innovative pilot program to engage the local community to become more aware of NASA and NASA's mission. This presentation outlines the current program and provides guidance to other NASA centers on ways to engage the local community.

Biography:

Dr. Michael P.J. Benfield is the Integrated Product Team (IPT) Deputy Program Manager at The University of Alabama in Huntsville. Dr. Benfield has been project manager of the one of the IPT Senior Design Experience projects for the past seven years and is the project manager of the Innovative Student Project for the Increased Recruitment of Engineering and Science Students (InSPIRESS) Level I project with the IPT program. Dr. Benfield holds a Ph.D. in Industrial and Systems Engineering and Engineering Management from The University of Alabama in Huntsville and has worked in the Huntsville aerospace industry for the past twelve years supporting both NASA and the U.S. Army Aviation and Missile Command on Redstone Arsenal.

Ms. Caruso manages the Engineering Technical Management Office at NASA's Marshall Space Flight Center (MSFC), which provides staff functions for the Engineering Directorate Senior Management. In this role, Ms. Caruso oversees a team comprised of civil service and contractor personnel that plans, directs, and coordinates research, development, technology efforts, and supporting tools in the areas of systems engineering, configuration and data management, and product life-cycle management as well as for the NASA Technical Standards Program and the Innovative Partnerships Program. Ms. Caruso and her team work with the Engineering Directorate to develop and maintain cross-cutting processes and tools to ensure consistency and rigor in the way that the Engineering Directorate conducts its business across MSFC.

Prior to NASA, Ms. Caruso spent twenty-four years working for the Department of the Army as a Civilian, and served in various leadership roles for the Space and Missile Defense Command. Ms. Caruso has a bachelor's degree in chemical engineering from the University of Alabama and a master's degree in engineering from the University of Alabama in Huntsville.